

ANALYTICAL REPORT


Prepared by
Lockheed Martin Information Systems and Global Services/Environmental Services
Scientific, Engineering, Response and Analytical Services

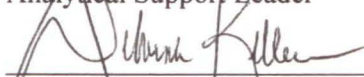
Paulsboro Train Derailment
Paulsboro, New Jersey

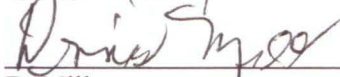
December 2012

EPA Work Assignment No. SERAS-001
LOCKHEED MARTIN Work Order SER40001
EPA Contract No. EP-W-09-031

Submitted to
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Table of Contents

Topic

Testing Laboratories Information
Detailed Sample Information
Introduction
Case Narrative
Summary of Abbreviations

Section I

Results of the Analysis for VOC (ppbv) in Air	Table 1.1a
Results of the Analysis for VOC ($\mu\text{g}/\text{m}^3$) in Air	Table 1.1b

Section II

Results of the LCS Analysis for VOC in Air	Table 2.1
Results of the Duplicate Analysis for VOC in Air	Table 2.2

Section III

Chain of Custody

Appendices

Appendix A Data for VOC in Air	X228
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Appendix will be furnished on request.





TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air, SERAS SOP# 1814, "*Analysis of Volatile Organic Analysis (VOCs) in Air by Gas Chromatography/Mass Spectrometry (GC/MS)*"

ERT/SERAS Laboratory
2890 Woodbridge Avenue
Edison, NJ 08837

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standard, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

ERT/SERAS Laboratory is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID # 12023 for VOC analysis in air.





Detailed Sample Information

SERAS Sample #

Field Sample #

R212009-01	40001-0010
R212009-02	40001-0012
R212009-03	40001-0013
R212009-04	40001-0014
R212009-05	40001-0015
R212009-06	40001-0016
R212009-07	40001-0017
R212009-08	40001-0018
R212009-09	40001-0019
R212009-10	40001-0020
R212009-11	40001-0021





Introduction

SERAS personnel, in response to WA# SERAS-001, provided analytical support for environmental samples collected from the Paulsboro Train Derailment in Paulsboro, New Jersey as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

The samples analyzed at SERAS were treated with procedures consistent with those specified in SERAS SOP #1008, *Sample Receiving, Handling and Storage* and SOP #1009, *Operation of Sample Refrigeration Units*.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
02-120912-111329-0002	11	12/9/12	12/9/12	12/9-10/12	Air	VOC/SERAS SOP #1814	ERT/SERAS	X229

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods stated in the QAPP. The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. Data were validated in accordance with the "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use" using a Stage 4 Validation done manually (S4VM). All data validation flags have been inserted into the results tables. At the request of the Work Assignment Manager, the laboratory reported results for vinyl chloride.

VOCs in Soil Package X229

The data package was examined and found to be acceptable.

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.



Summary of Abbreviations

BFB	Bromofluorobenzene
C	Centigrade
CLP	Contract Laboratory Program
COC	Chain of Custody
conc	concentration
cont	continued
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D	(Surrogate Table) value is from a diluted sample and was not calculated
Dioxin	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/MS	Gas Chromatography/ Mass Spectrometry
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD)	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
SOP	Standard Operating Procedure
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
PQL	Practical Quantitation Limit
PAL	Performance Acceptance Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SERAS	Scientific, Engineering, Response and Analytical Services
SIM	Selected Ion Monitoring
Sur	Surrogate
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m ³	cubic meter	g	gram	kg	kilogram	L	liter
μg	microgram	μL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	s	sigma

Data Validation Flags

J	Value is estimated	R	Value is unusable
J+	Value is estimated high (metals only)	U	Not detected
J-	Value is estimated low (metals only)	UJ	Not detected and RL is estimated
N	Presumptively present (Aroclors only)		

Rev. 1/14/09





Table 1.1a Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Method: SERAS SOP#1814

SERAS Sample Number	MethodBlank120912-01				P SystemBlank120912-01		R212009-11		R212009-01		R212009-02	
Sample Number	N/A				N/A		40001-0021		40001-0010		40001-0012	
Sample Location							School		School		Jessup	
Analyte	Results ppbv	RL ppbv	Results ppbv	RL ppbv	Results ppbv	RL ppbv	Results ppbv	RL ppbv	Results ppbv	RL ppbv	Results ppbv	RL ppbv
Vinyl Chloride	U	0.0300	U	0.0300	U	0.0150			0.0749	0.0300	0.321	0.0300

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212009-03		R212009-04		R212009-05		R212009-06		R212009-07	
Sample Number	40001-0013		40001-0014		40001-0015		40001-0016		40001-0017	
Sample Location	White Swan		Library		Church		High School		Mantua	
	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
Analyte	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	0.0866	0.0300	0.259	0.0300	0.736	0.0300	0.104	0.0300	0.195	0.0300

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212009-08		R212009-09		R212009-10	
Sample Number	40001-0018		40001-0019		40001-0020	
Sample Location	Police Station		School		Firehouse	
Analyte	Results ppbv	RL ppbv	Results ppbv	RL ppbv	Results ppbv	RL ppbv
Vinyl Chloride	0.131	0.0300	0.0745	0.0300	0.0941	0.0300



Table 1.1b Result of the Analysis for VOC (µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Method: SERAS SOP#1814

SERAS Sample Number	MethodBlank120912-01		P SystemBlank120912-01		R212009-11		R212009-01		R212009-02	
Sample Number	N/A		N/A		40001-0021		40001-0010		40001-0012	
Sample Location	N/A		N/A		School		School		Jessup	
Analyte	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3
Vinyl Chloride	U	0.0767	U	0.0767	U	0.0383	0.191	0.0767	0.822	0.0767

Table 1.1b (cont) Result of the Analysis for VOC (µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212009-03		R212009-04		R212009-05		R212009-06		R212009-07	
Sample Number	40001-0013		40001-0014		40001-0015		40001-0016		40001-0017	
Sample Location	White Swan		Library		Church		High School		Mantua	
Analyte	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3
Vinyl Chloride	0.221	0.0767	0.661	0.0767	1.88	0.0767	0.267	0.0767	0.498	0.0767

Table 1.1b (cont) Result of the Analysis for VOC (µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212009-08		R212009-09		R212009-10	
Sample Number	40001-0018		40001-0019		40001-0020	
Sample Location	Police Station		School		Firehouse	
Analyte	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3
Vinyl Chloride	0.335	0.0767	0.190	0.0767	0.240	0.0767



Table 2.1 Results of the LCS Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Sample ID: LCS 12/09/12

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Vinyl Chloride	1.00	1.03	103	54 - 149

*Indicates out of the criteria

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Table 2.2 Results of the Duplicate Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Sample id: 40001-0013

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	0.0866	0.0913	5	≤25

Table 2.2 (cont) Results of the Duplicate Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Sample ID: 40001-0016

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	0.104	0.109	5	≤25

Table 2.2 (cont) Results of the Duplicate Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Sample ID: 40001-0020

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	0.0941	0.0921	2	≤25

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USEPA

Date Shipped: 12/9/2012

Carrier Name:

Air Mail No:

V00# 212009

CHAIN OF CUSTODY RECORD

Site #: 40001

Contact Name: Colleen Steffensen

Contact Phone: 609-865-6650

No: 2-120912-111329-0002

Cooler #: 1

Lab: ERT/SERAS

Lab Phone: 732-321-4200

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Pump #	OrificeID	Start Pressure	Stop Pressure
01	40001-0010	School	TO-15	Air	12/9/2012	1	6-L summa	121	13931	-30	-2
02	40001-0012	Jessup	TO-15	Air	12/9/2012	1	6-L summa	202	13963	-30	-3
03	40001-0013	White Swan	TO-15	Air	12/9/2012	1	6-L summa	236	13767	-30	-1
04	40001-0014	Library	TO-15	Air	12/9/2012	1	6-L summa	1134	13789	-30	-3
05	40001-0015	Church	TO-15	Air	12/9/2012	1	6-L summa	129	13913	-30	-3.5
06	40001-0016	High School	TO-15	Air	12/9/2012	1	6-L summa	215	13762	-30	-0
07	40001-0017	Mantua	TO-15	Air	12/9/2012	1	6-L summa	92 98	014011	-30	-1
08	40001-0018	Police Station	TO-15	Air	12/9/2012	1	6-L summa	102	14032	-30	-3
09	40001-0019	School	TO-15	Air	12/9/2012	1	6-L summa	115	13949	-30	-3
10	40001-0020	Firehouse	TO-15	Air	12/9/2012	1	6-L summa	98 92	13959	-30	-3
11	40001-0021	School	TO-15	Blank	12/8/2012	1	6-L summa	8	-	-30	-30

Special Instructions:

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All Analysis		12/9/12		12/9/12	1520	All Analysis		12/9/12		12/9/12	17:15